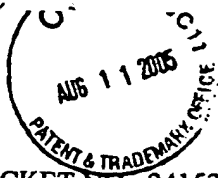United States Patent and Trademark Office
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## IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF           :

FUMIO KINOSHITA, ET AL.    : EXAMINER: BATSON, V.

SERIAL NO: 10/645,543         :

FILED: AUGUST 22, 2003       : GROUP ART UNIT: 3671

FOR: CONTINUOUS UNDERGROUND   :
TRENCH EXCAVATING METHOD AND
EXCAVATOR THEREFOR

## SUPPLEMENTAL RESPONSE

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

In response to the Office Action dated February 22, 2005 and the notice of non-responsiveness dated Jul 11, 2005, Applicants respond as follows:

The Examiner had objected to the specification because equations 2 and 3 allegedly reduce to $F_z=0$. Applicants replied in the response of April 22, 2005 that equation 2 is directed to the penetration resistance during penetration operation whereas the value of the frictional resistance Ffz in equation 3 is calculated by operating the lift cylinders in an unloaded (unlanded) floating state (page 9, lines 7-10).

According to the notice of non-responsiveness, if equation 3 represents resistance when the trencher is floating in the air, why does the cutter post volume or the liquid specific gravity $\gamma$ around the cutter post affect frictional resistance. In reply, Applicants note that while equation 3 refers to the excavator being in an "unlanded, floating state in the air," this does not require that it be out of the environment of the trench.